

Super NES

DEVELOPMENT SYSTEM

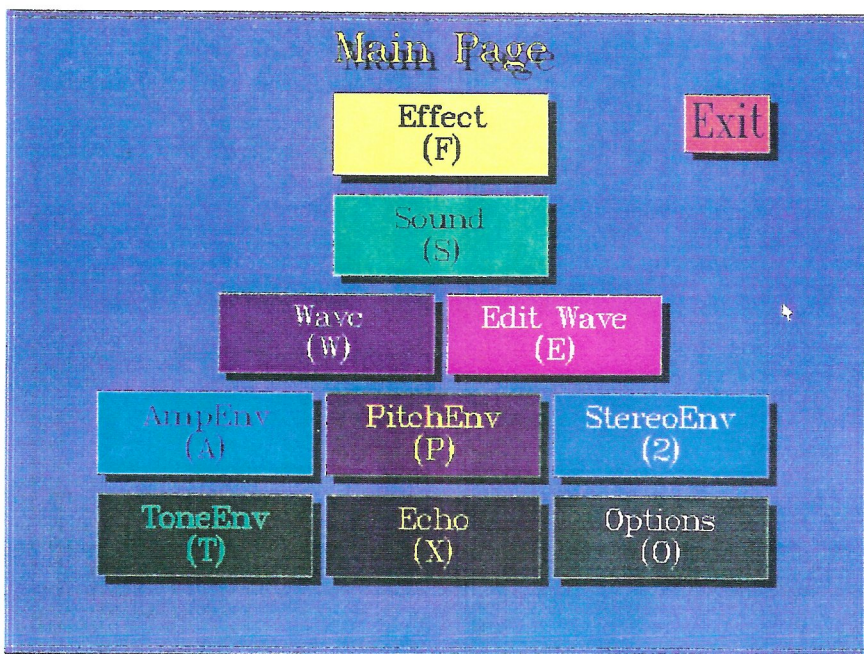
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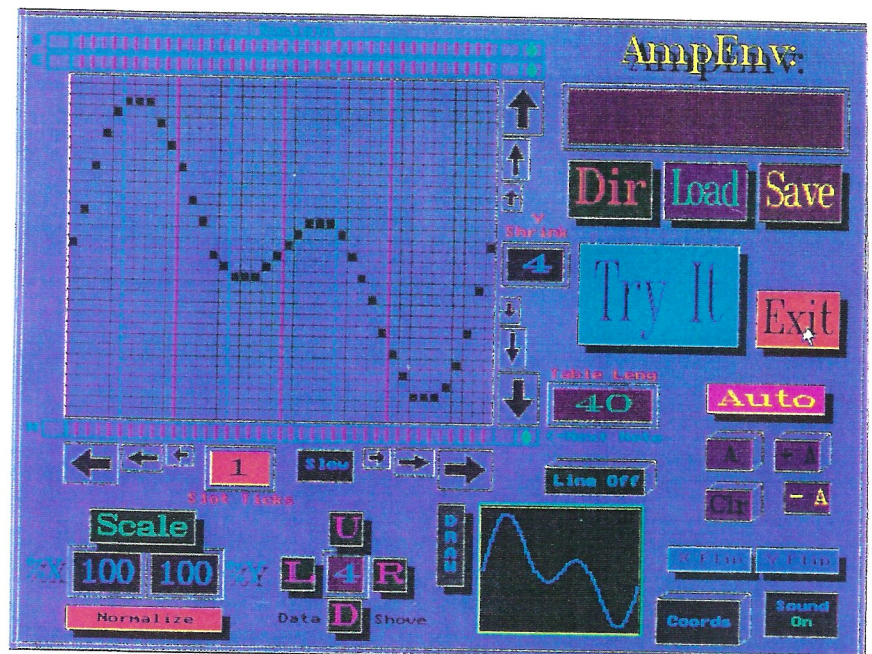
BERLIOZ

Berlioz is Sculptured Software's sound effects and music generation package for the Super NES. One of the programs in the package is titled Bwave. This tool is used to generate sound effects for the Super NES. Bwave can also convert raw digitized sounds into a format usable by the Super NES.

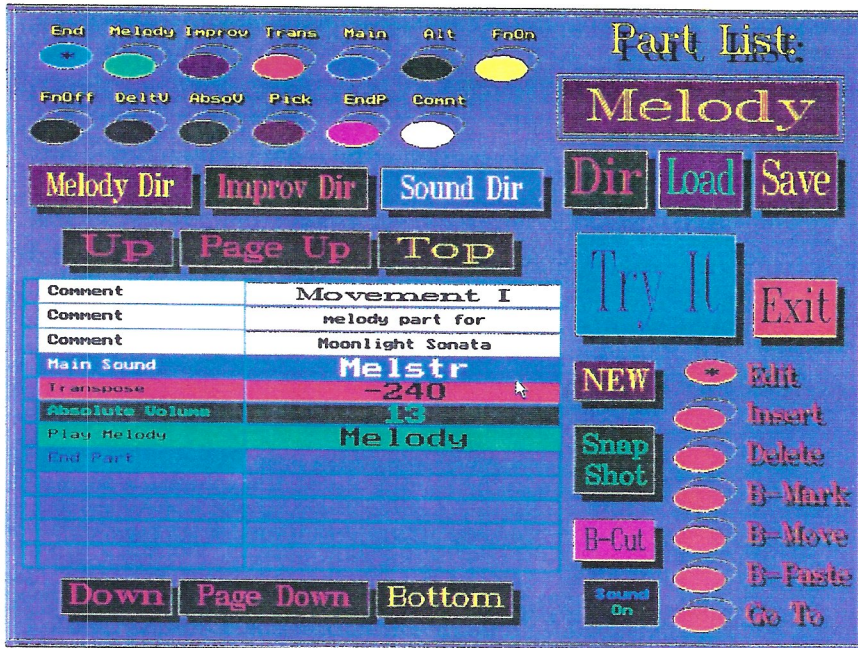


Bwave allows the user to manipulate a wide variety of sound effect wave forms and other variables.

Bmus is the second program in the package and allows the user to generate and edit complete musical scores.

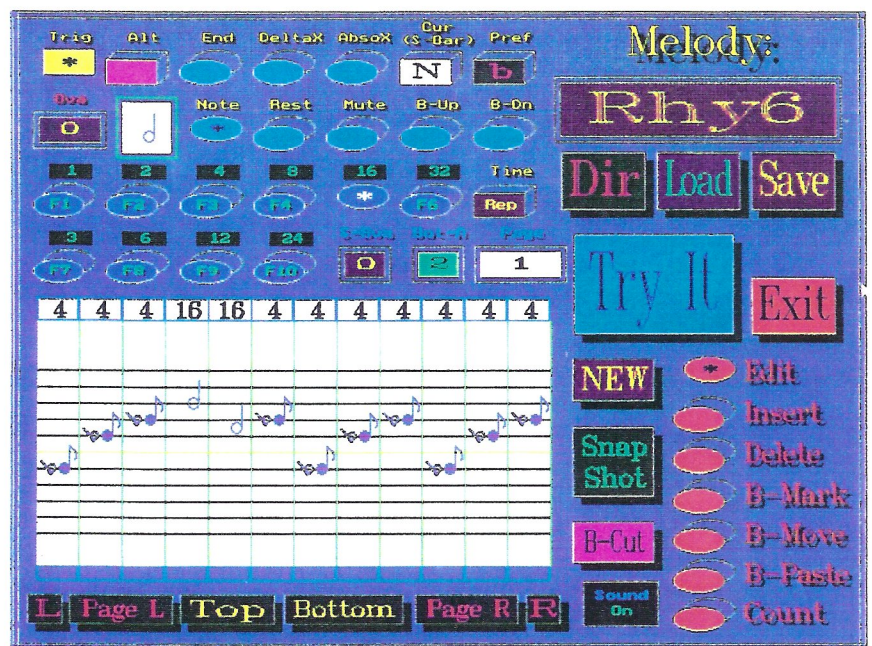


BERLIOZ



Bmus breaks up a score into individual parts, which can be edited and re-used throughout the song. This gives the musician a very high degree of flexibility in generating music.

Bmus displays melodies in a graphical format allowing for easy editing. At any point during the song generation, the musician can transmit the work in progress to the Super NES and listen to the results.



BERLIOZ

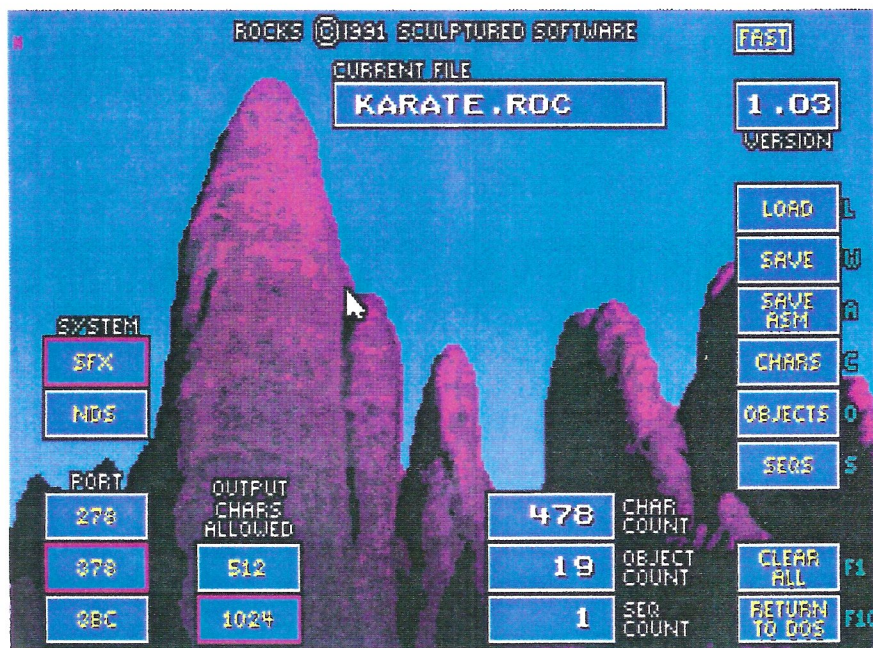
MUSIC AND SOUND UTILITY

FEATURES LIST

- Easy to use graphical interface with visual representation of sound data.
- Includes a Sony SPC700 single-pass assembler to allow writing of custom sound drivers.
- Includes driver for music and dynamically allocated sound effects (in object code format).
- Allows full manipulation of amplitude envelopes, harmonic envelopes, and pitch contouring.
- Allows graphic drawing and editing of waveforms, re-sampling to lower sampling rates, adjusting of volume, high and low pass filters, and adding and joining digital samples together.
- Features use of crescendos and diminuendos for musical expression.
- Some real-time tempo control is available.
- Allows any type of pitch bend.
- Includes MIDI Standard 1.0 file conversion utility.
- Extensive editing provided for musical compositions.
- Allows the musician to hear composition during an editing session by clicking on a button.
- Outputs assembler source code with data objects referred to by name. Assembler source can easily be incorporated into program.
- Uses a high-level composition structure allowing large compositions to be broken down into atomic elements.
- Separate compositions can share data for efficient storage. Repeated melodic and rhythmic patterns can be called as subroutines, thus conserving memory.
- Sounds can be digitized externally to Berlioz and then transferred into Berlioz in 8 bit signed raw format.
- Sound driver supports the full range of Sony SPC700 memory.

ROCKS

Rocks is Sculptured Software's sprite animation tool for the Super NES. Rocks was designed as a sister tool to Sculptured's tile editor Eon. It uses the same user-friendly interface as Eon which requires the artist to only learn one type of interface.

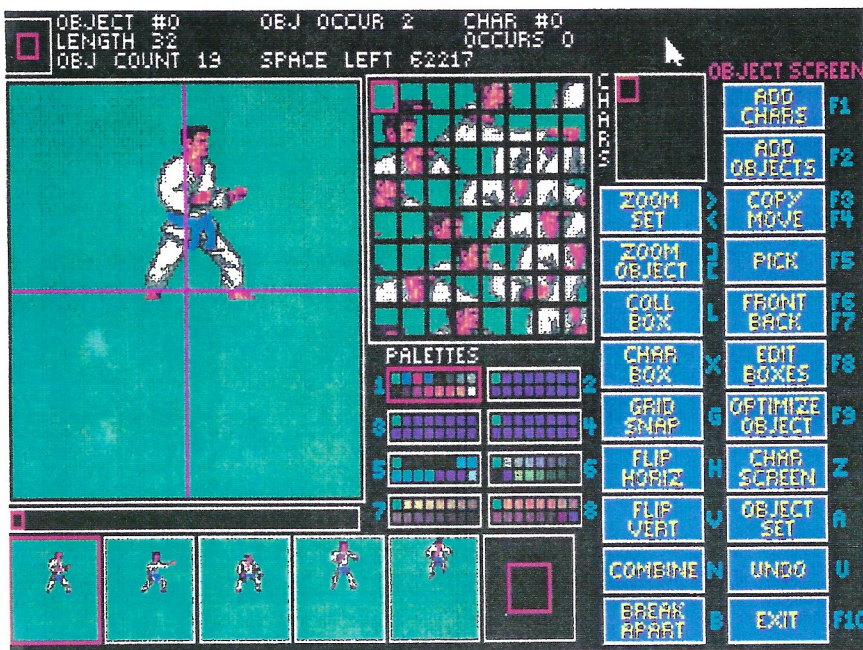


Rocks can load specially prepared IFF ANIM format files and "rip" them into characters and objects. It even loads in the sequence and playback information.

Characters can be edited, rotated, and have their colors set for display.

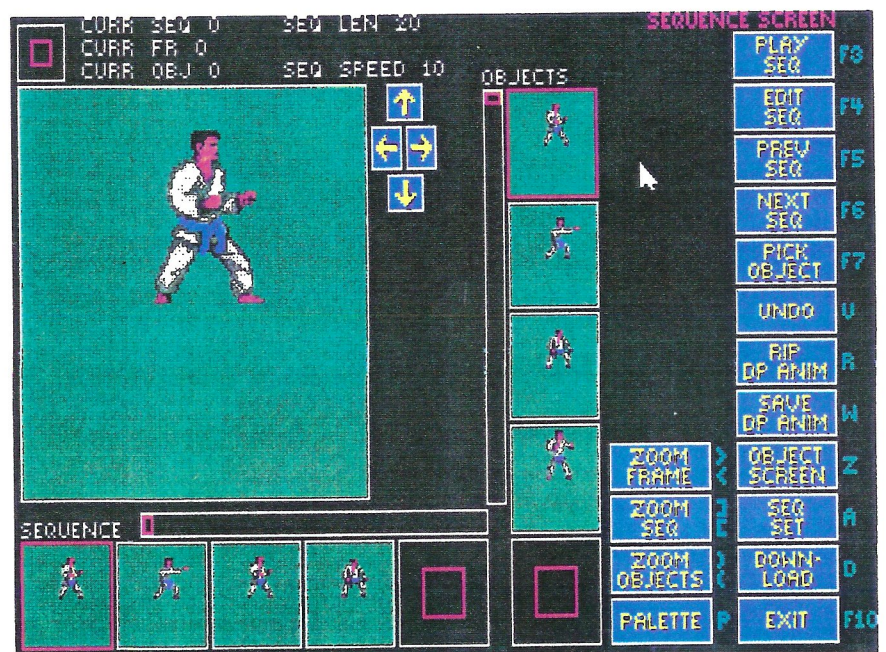


ROCKS



Rocks can generate up to 128 objects that are defined in a 16x16 grid. These objects can then be manipulated in a variety of ways.

Once the artist has generated the required objects, sequences can be built up from them. Rocks allows up to 32 sequences to be constructed.



After the sequences have been created, the artist can then transmit the work to the Super NES Development System and view the results. Once the artist is satisfied with the work, assembler source files can then be generated for the programmer.

ROCKS

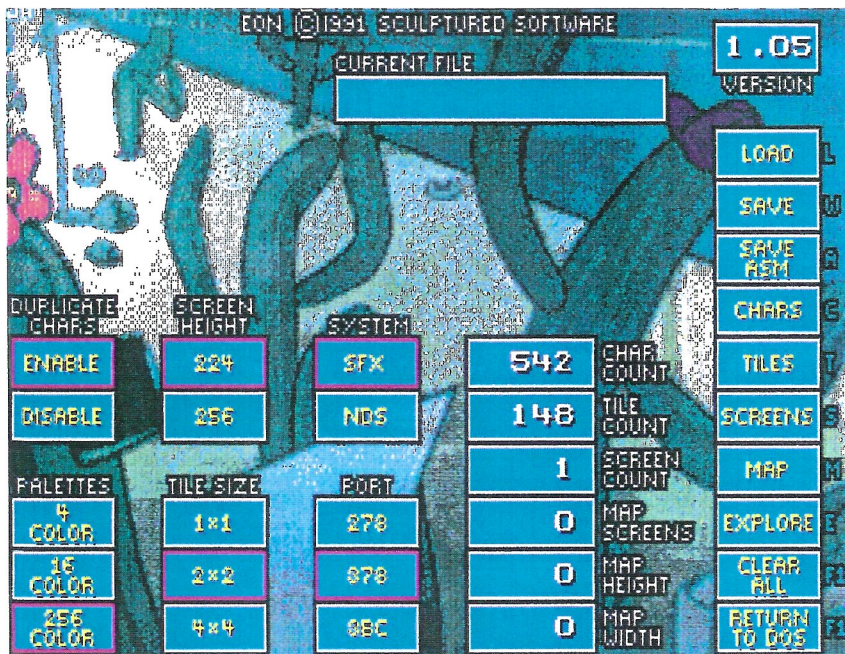
SPRITE ANIMATOR

FEATURES LIST

- Conforms to the industry standard Dpaint.
- Can load in standard Dpaint animation files and dissect them into characters usable by the Super NES.
- Editing can take place on a character basis, or object basis (an object is a frame of animation, and is made up of characters).
- Up to 1024 characters can be dissected per sequence of objects, including recognizing flipped characters. This is more than the Super NES can hold in VRAM at one time.
- Character sets can be compacted based upon pixel differences between characters.
- Color palettes can also be edited.
- Sequences of objects can be animated on the IBM PC or downloaded directly to the Super NES.
- Sequences can be edited and saved out again as standard Dpaint animation files or in ROCKS format.
- Animation data can be output as Super NES-ready assembly files, with labels included.
- Timing and placement of animation frames can be adjusted, to fine tune their performance on the Super NES.

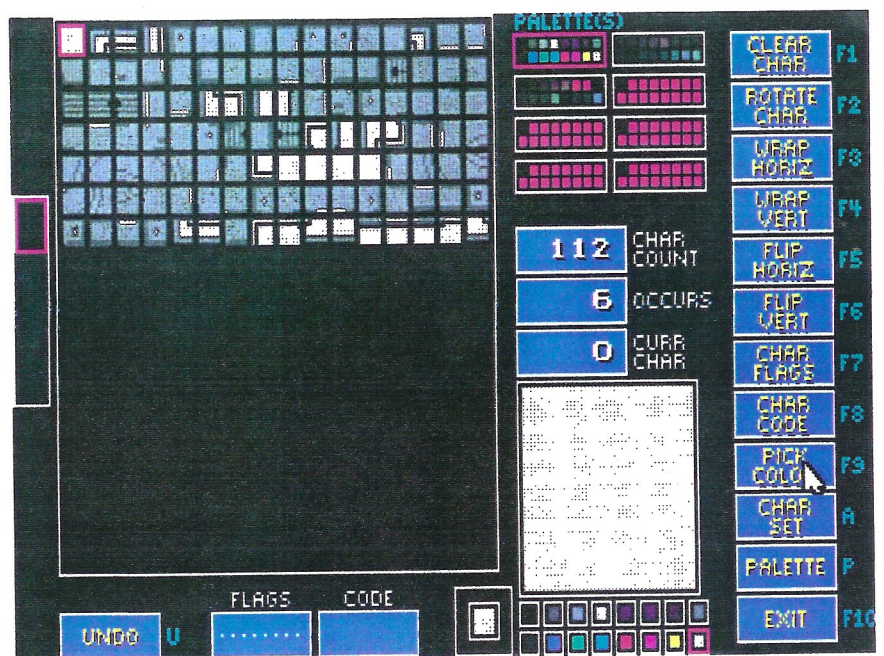
EON

Eon is Sculptured Software's background tile editor for the Super NES. It has many features and options that make it the "Artist's Choice" at Sculptured Software. The backgrounds can be organized as 1x1 character tiles, 2x2 character tiles, 4x4 character tiles, full screens, or as a map of screens. Characters, tiles, and screens are integrated together into a complete background system. The graphics can be drawn as characters in Eon or "ripped" from IFF format paint files into characters, tiles, and screens.

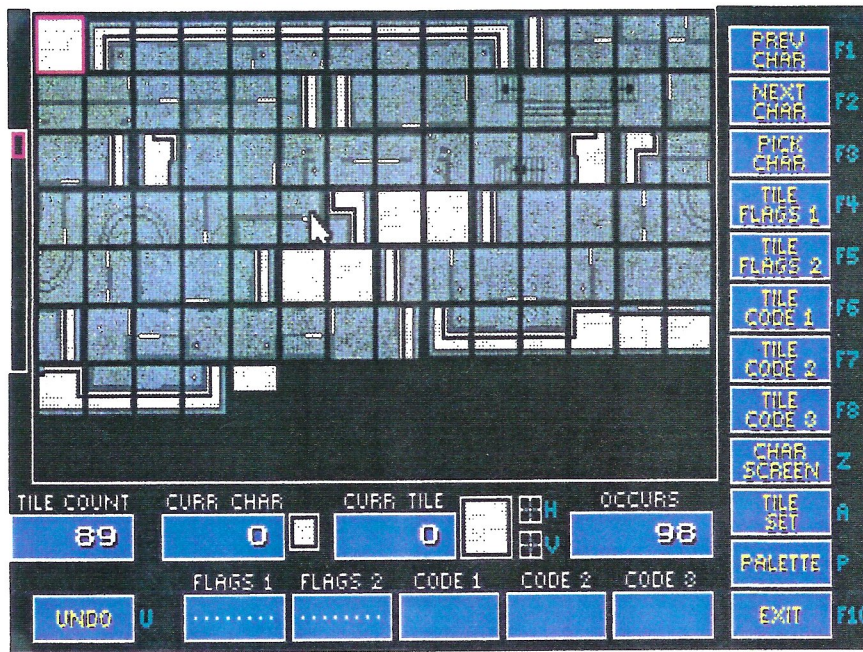


The character set can be modified, compressed, and rearranged. Flags can be assigned to individual characters for programming purposes such as collisions, enemy generation, or masking.

Characters can be put together into tiles. Tiles can be compressed and rearranged. Flags can be assigned to tiles for collision checks, etc.

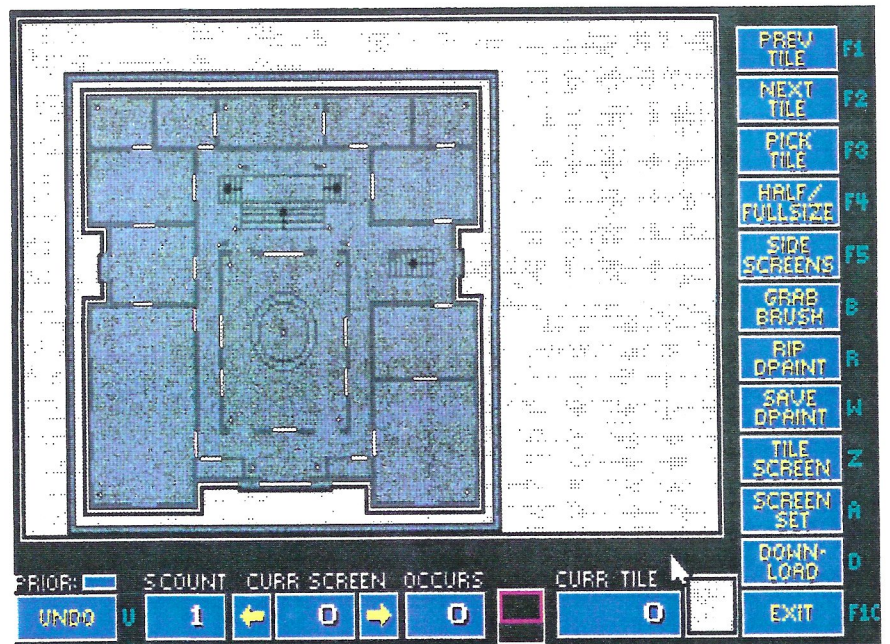


EON



Tiles may be put together to build screens. Tile groups may be grabbed and moved around as brushes.

Screens may be placed into a grid-structured map. This simplifies making "worlds" for Super NES games.



EON

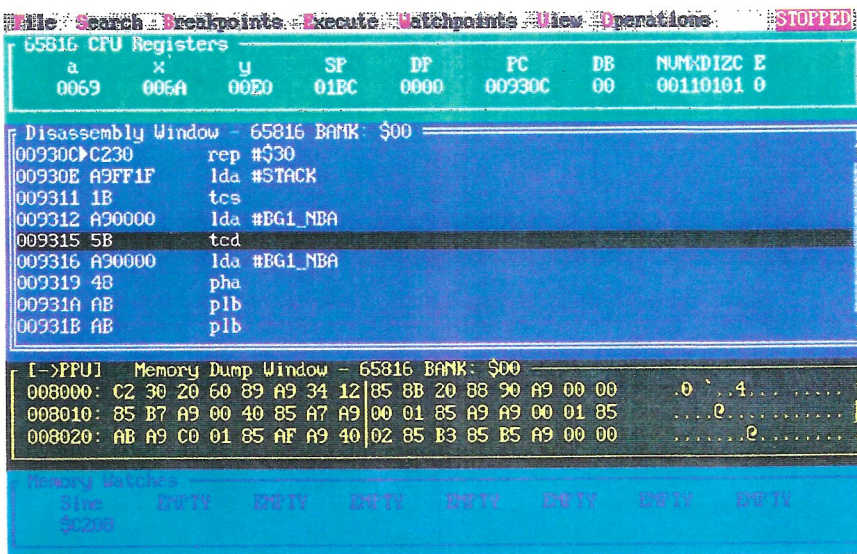
BACKGROUND ART EDITOR

FEATURES LIST

- Can load in standard Dpaint background files and convert them into a format compatible with the Super NES.
- Formats such as 256 color, 8 x 16 color, or 8 x 4 color palette modes can be chosen.
- Editing features such as cutting and pasting of screens can be done without the danger of creating new characters.
- Characters can be flipped and palettes swapped.
- Backgrounds can be displayed on the IBM PC or on the Super NES.
- Compaction of characters can be performed, based on a few user-selectable parameters.
- User selectable tile sizes: 1 x 1, 2 x 2, or 4 x 4 characters.
- Capacity for up to 64 screens in one file (16 screens maximum in 1 x 1 tile size).
- Large maps can be constructed from individual screens.
- Optional tiling information may be stored in 14 flags and 3 code bytes per tile to control collision checks, masking, attributes, altitudes, etc.
- Data on character sets, screen layouts, map layout, and palette, may be saved out to assembler files, which are ready, including labels, to be assembled into program code.
- User selectable screen height: 240 pixels high for static screens, or 256 pixels high for scrolling screens.

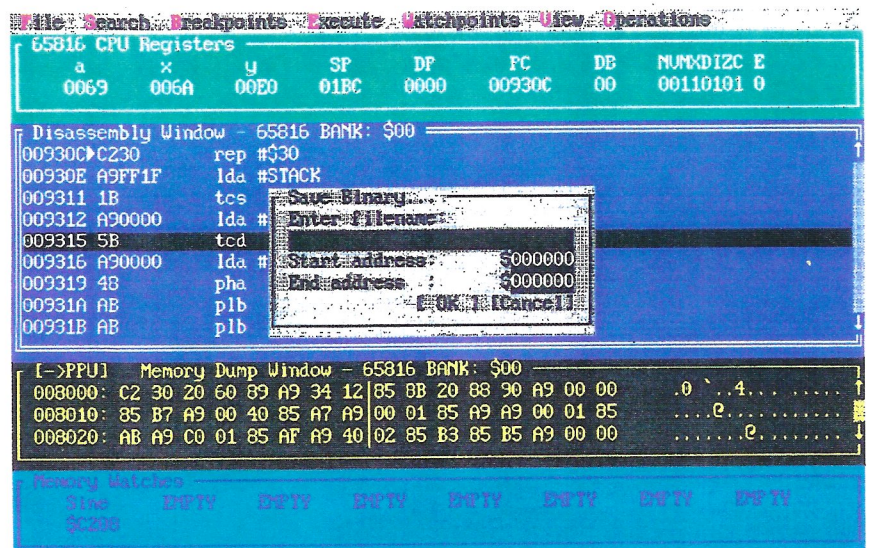
SDEBUG

Sdebug is Sculptured Software's symbolic debugging tool which works in conjunction with our SASM cross-assembler for the Super NES. Sdebug uses an easy to learn menu and window environment, giving the programmer clear and easy access to all commands. The programmer can use either the mouse or the keyboard to execute commands.



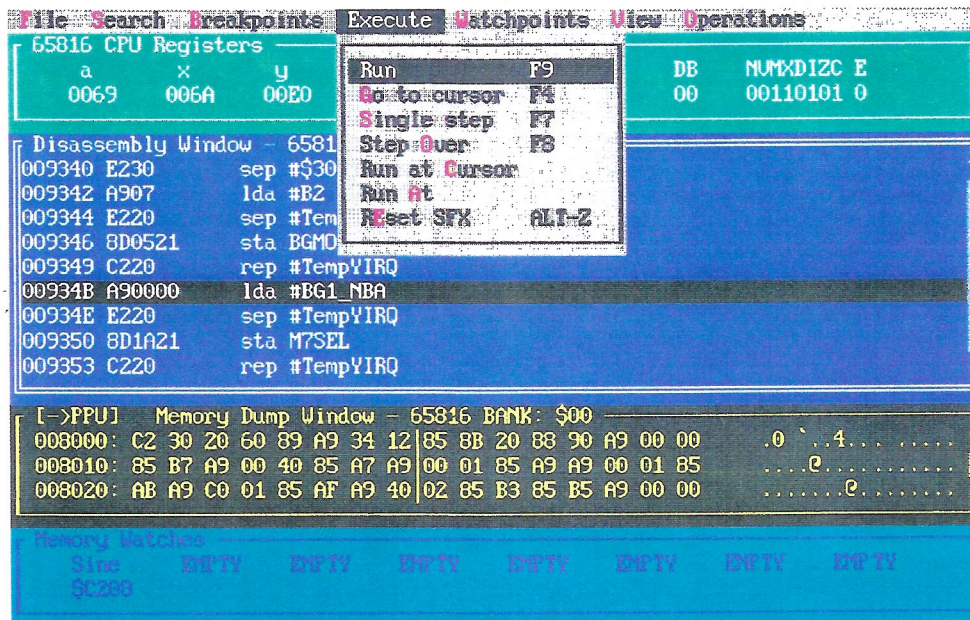
In addition to the standard 65816 object code disassembly, Sdebug also provides symbolic debugging when used with SASM's symbol generation features.

Sdebug also provides an easy way to generate binary ROM images, which can be loaded into most EPROM burning software packages.



SDEBUG

Sdebug utilizes software breakpointing techniques that allow the programmer to set up to sixteen software breakpoints. An additional breakpoint is available to support single-step operation, which allows the user to view the status of the 65816 after each instruction has executed.



Sdebug also includes the ability to set up to eight Super NES RAM watchpoints. The watchpoints are updated every time execution is halted.

SDEBUG

SYMBOLIC DEBUGGER

FEATURES LIST

- Easy to use windowing environment with pull down menus.
- Allows full view of CPU register and flag status.
- Disassembles in one of two modes: Object code or Symbolic.
- Hexadecimal memory dump display accompanied by an ASCII representation of the data.
- Up to eight Super NES ram locations can be defined as watch variables which are updated at every breakpoint.
- Support for EGA/VGA 43/50 line video modes allowing more data to be displayed on EGA/VGA systems.
- Full software breakpoint support: Single Stepping, Skip Instruction, Execute to Cursor.
- Ability to Load and Save binary rom image files.

SASM

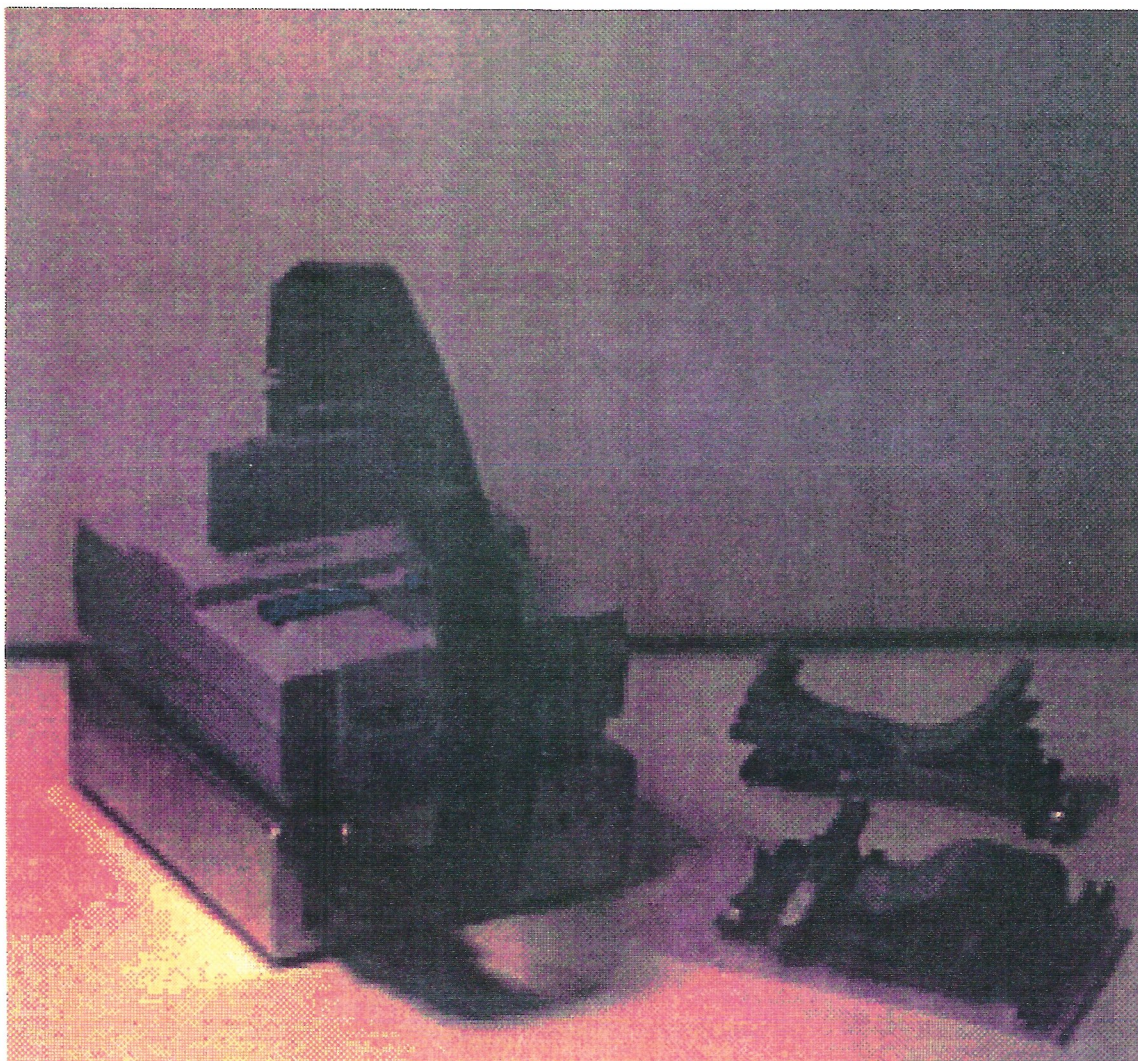
ASSEMBLER

FEATURES LIST

- Fast single pass assemblies. (Up to 150,000 lines per minute on a 386-33Mhz PC System).
- Support for all 65816 instructions and addressing modes.
- Follows WDC syntax specifications, including immediate mode and addressing mode modifiers.
- Allows linking of multiple files into each bank, speeding up the compilation process. Output of label files can be incorporated into other source files. This allows for individual module development through psuedo-linking.
- Designed specifically for the Super NES with full support for the shadowing of memory below \$8000.
- Outputs our standard NOB binary file format for quick and efficient downloading to the target system.
- Accompanied by our reliable binary downloader 'SFL'. As this downloads binary information, it is not necessary to convert from Intel Hex. This results in a 67% reduction of download time.

THE HARDWARE

The board is a free standing printed circuit board mounted in an aluminum box roughly the size of the Super NES. It connects via parallel port to any standard IBM PC. We supply our own high speed parallel interface card. From the parallel card, a ribbon cable connects to a cartridge interface board that plugs directly into a Super NES console. The consoles require no modification. 8 Mega bits of ram reside on the board to emulate program/graphics space. Another 128K bytes of ram was added to the SFX-2 to support debugging. We've strived to use only the most reliable components, and we draw upon our previous NES and Game Boy development system experience to make selections of each component. Clients may optionally request add-on hardware that supports the DSP math coprocessor, as used in "Pilot Wings". The system is 100% compatible between the Super NES and the Japanese Super Famicom.



History of the Super NES Development System

The first Super NES development system created by Sculptured came to life in the fall of 1990. The board, deemed the SFX-1, was based on the de-engineering of the Japanese Super Famicom console. It contained ram to emulate up to 8 Mega bits of rom space. The SFX-1 was designed to be used in conjunction with an IBM PC or compatible, and connects via common parallel ports. A 25 Megahertz 386 is the recommended minimal system. Utilities were created to support the hardware such as a background artwork utility, sprite animator, symbolic debugger, a cross assembler, digitized voice and sound generation and playback, sound and music generation/editing/driver. The SFX-1 hardware fits conveniently under the SFX console in an aluminum box, and the utilities reside on your IBM PC hard drive.

By January CES, 1991 we had completed an updated board which included debugging capabilities. We call this board SFX-2. The tools are compatible between the two boards. By now the utilities had evolved extensively. Sculptured is developing numerous Super NES titles, and the programmers have all contributed greatly to the utilities. Only our most experienced programmers are developing on the SFX, so we have faith that the utilities are very professionally written. As an example, very few companies worldwide have successfully de-engineered the music and sound chip effectively; our utilities accomplished this over a year ago.

We've licensed more NES development systems than anyone worldwide, so we learned a lot about the needs of development. Both our electronics and our utilities have evolved from our experiences in the NES world. One of the keys is to deliver a system that works in a standard way. An example is the sprite animation utility, which incorporates standard DPAINT animation files, which saves the majority of our clients time.

In general, we encourage our clients to contribute suggestions for desired features in the utilities. We have a manager dedicated to supporting our development systems, and it is his job to listen to anyone who has a suggestion that allows us to improve the system.

CONTRACTUAL MATTERS (Licensing fee includes...)

We have a standard licensing agreement we sign prior to the transfer of the system. From our NES exploits, we've learned it is wise to standardize the price of hardware. On the other hand, we've found our clients have differing needs in documentation, utilities, service and training. We've chosen to keep the board price low and separate the cost of these other items. These items have or will cost Sculptured very real dollars, so our licensing fee helps to defray a portion of these costs. We negotiate a license fee based upon the needs of the client. The license fee covers documentation, utilities, service and training.

DOCUMENTATION

The contract includes support of hardware as well as software. The contract typically specifies an 18 month "support term". If there is ever a problem with the hardware, simply call and we'll overnight you a replacement, and request that you overnight your existing system back to us. If you determine there is any problem with the utilities, simply call and we'll start on a revision as soon as possible. Remember we want the utilities perfected too, so we have motivation to consider it a priority. An idea that has worked in the past is to offer free extensions to the 18 month support term for every bonafide evaluation of the system provided by the client. This has proven to keep the client involved with our development system technicians, and allows us to further the system.

UTILITIES

These are the major software programs relating to art, music, and programming previously described in this document. These utilities are supplied immediately upon transfer of the system. Periodic updates are included during the support term.

SERVICE

Each utility we supply is accompanied by documentation which describes its use. With so many of our programmers, artists, musicians, and managers using the utilities, we have a good opportunity to enhance the documents regularly. Additionally, we encourage our clients to contribute their comments on ways to improve the documentation. Periodic updates are included during the support term.

TRAINING

We offer training for one or two of your key personnel on-site at Sculptured as part of the package. We'll teach these personnel what we know of the Super NES architecture, the use of tools, etc. Upon request, we'll even develop the shell of a sample program your personnel may anticipate working on. Our development system technicians want to use this time to get your personnel rolling so that, frankly, there will be less problems for both parties down the road. The training sessions last up to 2 days in length. We recommend your personnel be experienced game developers and spend one week with our documents prior to training.